REMARKS

With the entry of this Response, Applicants have amended the Specification at paragraphs [0006], [0012], [0017], and [0018] to add SEQ ID NOs: 36-106 to amino acid sequences that are listed in FIGS. 3, 9, 14, and 15 as originally filed. Applicants have also provided an amended "Sequence Listing" to reflect the addition of SEQ ID NOs: 36-106. Support for these amendments can be found in at least in FIGS. 3, 9, 14, and 15 of the originally filed Specification.

Claims 1-80 are pending. Applicants have previously withdrawn Claims 1-3, 11, 14, 24-28, 34, 40, 46, 49, 51, 53, 57, 59, and 62, and have previously cancelled Claims 4-10, 12-13, 15-23, 29-33, 35-39, 41-45, 47-48, 52, 54-56, 58, 60-61, and 63. Claims 50, 64-67, are 74-80 are currently under consideration.

In this Response, Applicants have amended Claims 50 and 78. Claim 50 has been amended to recite "wherein the Nup153 inhibitor is a peptide." Support for amended Claim 50 can be found at least in the claims as originally filed and at least in paragraphs [0036]-[0044]. of Applicants' published Specification. Claim 78 has been amended to claim dependency from Claim 75 rather than from Claim 74, thereby providing proper antecedent basis for Claim 75. Support for amended Claim 78 can be found at least in the claims as originally filed.

Claims 77-80 are new. New Claim 77 recites a method of inhibiting a cell cycle of a cell comprising administering a Nup153 inhibitor to the cell, wherein the Nup153 inhibitor inhibits the cell cycle of the cell, wherein the Nup153 inhibitor interferes with a Nup153-COPI interaction. New Claims 78 depends from new Claim 77 and recites wherein the Nup153 inhibitor directly or indirectly interferes with a Nup153-COPI interaction. New Claim 79 depends from Claim 77 and recites wherein the Nup153 inhibitor interacts with the zinc finger region of Nup153. New Claim 80 depends from amended Claim 50 and recites wherein the Nup153 inhibitor interacts with the zinc finger region of Nup153. Support for new Claims 77-80 can be found in the Specification at least in paragraphs [0030] and [0036]-[0053].

Claims 1 and 77 are independent claims. In view of the subsequent remarks regarding these independent claims, Applicants respectfully request allowance of all the pending claims.

OBJECTIONS

A. Title

The Office Action objected to the Title of the invention for allegedly being "not-descriptive." (Office Action, p. 3). In light of Applicants' amendment to the Title, Applicants respectfully submit that the Office Action's objection is moot.

B. Sequence Listing

The Office Action objected to Specification for allegedly "failing to comply with 37 C.F.R. § 1.821(d)." The Office Action noted that while the Specification discloses amino acid sequences in FIGs. 3, 9, 14, and 15, the Specification does not identify these sequences by SEQ ID NOs. in the figures or in the brief description of the figures. In light of Applicants' amendments to the Specification and Applicants' concurrent submission of an amended "Sequence Listing," Applicants respectfully submit that the Office Action's objection is moot.

35 U.S.C. § 112, FIRST PARAGRAPH, REJECTION

The Office Action rejected Claims 50, 64-67, and 74-76 under 35 U.S.C. § 112, first paragraph, because the Specification allegedly "does not reasonably provide enablement for a method of inhibiting the cell cycle of a cell *in vivo* comprising administering a Nup153 inhibitor to the cell." (Office Action, p. 5). The Office Action stated that "the narrowly defined and controlled conditions of an in vitro assay system does not permit a single extrapolation of in vitro assays to human therapeutic efficacy with any reasonable degree of predictability. No model that can reasonably be correlated to the breadth of the claimed method has been presented." (Office Action, pp. 8-9). Applicants respectfully traverse this rejection to the extent that it applies to the claims as amended.

The enablement requirement of § 112 is satisfied when the specification describes a claimed invention in a manner that permits one of ordinary skill in the art to practice it, without undue experimentation. (M.P.E.P. § 2164.01). The M.P.E.P. states that "the specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. *In re Borkowski*, 422 F.2d 904, 908, 164 U.S.P.Q. 642, 645 (C.C.P.A. 1970)." (M.P.E.P. § 2164.02). The mere fact that experimentation *might* be required is insufficient to support an enablement

rejection, and complex experimentation is not necessarily undue experimentation. (*See* M.P.E.P. § 2164.01).

Applicants note that the question of enablement is one of predictability in view of what is known in the art. Consequently, the amount of guidance or direction needed to satisfy the enablement requirement is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. (M.P.E.P. § 2164.03). However, Applicants are not required to disclose everything necessary to practice the invention and what is well-known is best omitted. (*In re Buchner* , 929 F.2d 660, 661 (Fed. Cir. 1991)). In fact, "all that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art. Further the scope of enablement must only bear a "reasonable correlation" to the scope of the claims." (*See, e.g., In re Fisher*, 427 F.2d 833, 839 (C.C.P.A. 1970)).

To this end, Applicants' Claim 1 as amended recites a method of inhibiting a cell cycle of a cell comprising administering a Nup153 inhibitor to the cell, wherein the Nup153 inhibitor inhibits the cell cycle of the cell, wherein the Nup153 inhibitor is a peptide. Applicants submit that even if experimentation might be required to perform the claimed method, then such experimentation would not be undue. Applicants respectfully submit that, at the time of the filing, ***the art was familiar with making therapeutic peptides, testing therapeutic peptides, administering a therapeutic peptide to a subject to achieve a desired result, and adjusting the administration of a therapeutic peptide to a subject to achieve maximum efficacy.*** Thus, Applicants' Specification bears more than a "reasonable correlation" to the scope of the currently pending claims. Therefore, Applicants submit that the Specification sufficiently enables the skilled person to practice the claimed methods. Applicants thus respectfully request that the Examiner withdraw this rejection and allow these claims.

35 U.S.C. § 102(A) REJECTION

The Office Action rejected Claims 50 and 64-67 under 35 U.S.C. § 102(a) as allegedly being anticipated by Harborth *et al.* (J. Cell Sci., 114: 4557-4565 (2001)) (herein "Harborth"). Applicants respectfully traverse this rejection to the extent that it applies to the claims as amended.

A proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each and every element of the claim. Alternatively, anticipation requires that each and every element of the claimed invention be embodied in a single prior art device or practice. For anticipation, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. (*See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983); *In re Paulsen,* 30 F.3d 1475 (Fed. Cir. 1994); *In re Spada*, 911 F.2d 705 (Fed. Cir. 1990); *Minnesota Min. & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.,* 976 F.2d 1559 (Fed. Cir. 1992); *Scripps Clinic & Res. Found. v. Genentech, Inc.,* 927 F.2d 1565 (Fed. Cir. 1991)). Thus, in making a rejection under 35 U.S.C. § 102, the Patent Office is burdened with establishing that the cited art teaches each and every limitation of the claims.

The Office Action stated that Harborth teaches the administration of siRNA duplexes to silence nuclear envelope proteins. (Office Action, p. 9). The Office Action further stated that Harborth teaches "that administration of siRNAs directed against Nup153 to HeLa cells resulted in cells which rounded up and showed growth arrest," and that Harborth "anticipate[s] all of the limitations of Claims 50 and 64-67." (Office Action, pp. 9-10).

Applicants respectfully submit that Harborth fails to teach or disclose the subject matter of Applicants' currently pending claims. Harborth is directed to using RNAi to silence various genes including the Nup153 gene. However, Applicants' Claim 1 as amended recites a method of inhibiting a cell cycle of a cell comprising administering a Nup153 inhibitor to the cell, wherein the Nup153 inhibitor inhibits the cell cycle of the cell, wherein the Nup153 inhibitor is a peptide. As Harborth fails to teach or disclose a Nup153 inhibitor, wherein the Nup153 inhibitor is a peptide, Applicants respectfully submit that Harborth fails to teach or disclose Applicants' currently claimed method.

For at least these reasons, Applicants respectfully submit that Harborth does not teach or disclose each and every element of Applicants' currently pending independent Claim 1. Applicants also respectfully submit that Harborth does not teach or disclose each and every element of Applicants' new independent Claim 77. Thus, as Harborth fails to anticipate independent Claims 1 and 77, Harborth also fails to anticipate currently pending dependent Claims 64-67, which incorporate all of the elements of Claim 1, and currently pending dependent Claims 78-79, which incorporate all of the elements of Claim 77. As such,

Applicants respectfully request that the Examiner withdraw this rejection and allow these claims.

CONCLUSION

The foregoing is a complete response to the Non-Final Office Action mailed December 10, 2009. Applicants respectfully submit that at least Claims 50, 64-67, and 74-80 are patentable. Early and favorable consideration is solicited.

If the Examiner believes there are other issues that can be resolved by a telephone interview, or that there are informalities that remain in the application that may be corrected by the Examiner's amendment, then a telephone call to the undersigned attorney at (678) 420-9408 is respectfully solicited.

With this Response, Applicants also enclose a Petition for a one-month Extension of Time and a credit card payment. The credit card payment is in the amount of $65, which represents the small entity fee pursuant to 37 C.F.R. § 1.17(a)(1) for a one-month Extension of Time. Applicants believe that this is the correct amount due; however, Applicants authorize the Commissioner to charge to Deposit Account No. 14-0629 any additional fees that may be required, or to credit to the same account any overpayment of fees.

Respectfully submitted,

/Scott D. Marty, Reg. No. 53,277/
Scott D. Marty, J.D., Ph.D.
Registration No. 53,277

BALLARD SPAHR LLP
Customer Number 23859
(678) 420-9498 (direct)
(678) 420-9301 (fax)

APPENDIX A

Marked-up version of the replacement title.

METHODS OF INHIBITING CELL CYCLE OF A CELL COMPRISING ADMINISTERING A NUP153 INHIBITOR ~~AND COMPOSITIONS RELATED TO INHIBITING NUCLEAR ENVELOPE BREAKDOWN~~

Marked-up version of replacement paragraph [0006].

[0006] FIG. 3 contains illustrations of the Nup153 nuclear pore protein determined to have a role in nuclear disassembly and a domain-specific recombinant protein containing the central zinc-finger region of Nup153. From top to bottom, the five sequences are represented by SEQ ID NOs: 36–40).

Marked-up version of replacement paragraph [0012].

[0012] FIG. 9 shows the zinc finger domain of Nup153 associates with the COPI complex. FIG. 9A shows a silver staining of gel from GST pulldown assay. 2% of input (XEE, Xenopus egg extract) was loaded in lane 1. Molecular markers indicated are 198, 115, and 93 kD. (a) and (b) indicate two bands subjected to peptide sequencing. FIG. 9B shows sequences of peptides obtained from band (a) and band (b). Regarding band (a), from top to bottom, the sequences for ten peptides (SEQ ID NOs: 41, 43, 45, 47, 49, 51, 53, 55, 57, and 59) were aligned with those of homologous human proteins in the database (SEQ ID NOs: 42, 44, 46, 48, 50, 52, 54, 56, 58, and 60, respectively). Regarding band (b), from top to bottom, the sequences for six peptides (SEQ ID NOs: 61, 63, 65, 67, 69, 71, and 73) were aligned with those of homologous human proteins in the database (SEQ ID NOs: 62, 64, 66, 68, 70, and 72, respectively). ~~All sequences are aligned with those of homologous human proteins in the database.~~ FIG. 9C shows an immunoblot of GST pulldown samples with antibodies against human .alpha.-COP, .beta.-COP and .beta.'-COP, respectively.

Marked-up version of replacement paragraph [0017].

[0017] FIG. 14 shows alignment of zinc fingers of human Nup153, Nup358, and Np14. The sequences for x153ZnF1–x153ZnF4 are represented by SEQ ID NOs: 73-76, respectively; the sequences for h153Zn41–h153znF4 are represented by SEQ ID NOs: 77-80, respectively; the sequences for h358zF1–h358ZnF8 are represented by SEQ ID NOs: 81-88, respectively; the sequence for

hNpl4 ZnF is represented by SEQ ID NO: 89; and the sequence for Consensus is represented by SEQ ID NO: 90.

Marked-up version of replacement paragraph [0018].

[0018] FIG. 15 shows results of the phage display screen of Example 2. Peptides chosen for further testing are boxed. The two shades of text indicate sequences derived from two different wash conditions in the third round of selection. Basic residues (H, R, and K) are also highlighted. From top to bottom, these sixteen sequences are represented by SEQ ID NOs. 91-106, respectively.